GEARTECH	QUALITY PROCEDURE	No. QP8700	SHEET 1 OF 1
		Rev. A	
Gear Tooth Contact Patterns		BY RLE	DATE 8/13/02
		CKD JRM	DATE 8/13/02

1. Scope

1.1 This Quality Procedure gives overall guidelines for inspecting gear tooth contact patterns.

2. Referenced Documents

2.1 GEARTECH Specifications:

CK8700 QP8700 Gear Tooth Contact Patterns.

QP8701 Inspection of Gear Tooth Contact Patterns with Soft Compound.

QP8702 Inspection of Gear Tooth Contact Patterns with Hard Lacquer.

QP8703 Inspection of Gear Tooth Contact Patterns in a Roll Stand.

QP8704 Inspection of Gear Tooth Contact Patterns in a Gear Housing.

3. Terminology

3.1 No-load and low-load contact patterns- Contact patterns in accordance with QP8701.

3.2 Loaded contact patterns- Contact patterns in accordance with QP8702.

4. Significance and Use

4.1 Contact Patterns- Gear tooth contact patterns indicate how well a gearset is aligned and help determine operational compatibility of a pinion and gear.

4.2 No-load and low-load contact patterns- Contact patterns may be inspected in a roll stand in accordance with QP8703, or in a gear housing in accordance with QP8704, using marking compound in accordance with QP8701. A roll stand can be used to obtain near perfect alignment of the gearset axes to evaluate deviations from designed profile and helix. Contact patterns obtained in a gear housing include gear tooth deviations, gear housing bore deviations, and effects of bearing clearance.

4.2.1 Limitations- No-load and low-load contact patterns are not as reliable as loaded contact patterns for showing gearset alignment. The marking compound is thicker than hard lacquer used for loaded tests, and no-load or low-load tests do not show distortion and misalignment caused by load, speed, or temperature. Therefore, no-load or low-load tests are usually preliminary inspections that are followed by loaded tests in accordance with QP8702. If the contact patterns are unacceptable, it is usually necessary to inspect the gearset on a gear tooth inspection machine to determine actual gear tooth deviations.

4.3 Loaded contact patterns- Contact patterns may be inspected in a gear housing in accordance with QP8704, using lacquer in accordance with QP8702. Loads are applied to the gearbox in a test stand or in a field application. Contact patterns obtained under load show the cumulative effects of gear tooth deviations, gear housing bore deviations, bearing clearances, and deflections due to load, speed, and temperature.

4.3.1 Limitations- Loaded contact patterns show the cumulative effects of multiple gear tooth contacts, and not the individual effects of tooth-to-tooth contacts. Therefore, the area worn into the lacquer on a particular tooth is usually larger than the area of contact that occurs between the particular tooth and a mating tooth.